

Remarks

Upon entry of the above amendments, this application will contain claims 16, 20-27, and 31, pending and under consideration. In the present Response, no claims have been amended.

In the latest Office Action, the claims were rejected under 35 USC §103(a) over So et al. (US 4,760,138, referred to as “So”) in view of Bunger et al. (US 5,846,500, referred to as “Bunger”). For the reasons discussed more fully below, it is believed that these rejections are overcome. Consequently, reconsideration of this application leading to withdrawal of all rejections and timely allowance is respectfully requested.

Rejections Under 35 USC §103

Claims 16, 20-27, and 31 were rejected under 35 USC §103(a) over So in view of Bunger. The Applicants respectfully suggest that the claimed invention provides unexpected results that are neither anticipated nor made obvious by the references of record. The Applicants reiterate their previous comments from the prior Response (and incorporate those comments by reference)--that the present invention provides a novel, industrial process for the conversion of impure lime (impure calcium hydroxide) to a pure product of calcium carbonate containing the calcium derived from the lime. This invention is particularly applicable for the treatment of waste lime materials (e.g., carbide lime) for the recovery of calcium in the form of a useful product.

Furthermore, the Applicants respectfully suggest that the claimed process provides highly pure calcium carbonate. This is an unexpected result that heretofore has neither been observed nor anticipated. The evidence of unexpected results can be found in the application itself, turning specifically to Examples 1 through 3. For example, in Example 2 of the present application, PCC is provided in a highly pure state. Table 2, below, lists common impurities found in calcium carbonate. The Table lists the relative amount selected impurities in the purified PCC prepared according to the present invention. (Application, page 13) and the values of selected impurities from the precipitated calcium carbonate prepared according to the Bunger process (Bunger, cols. 9 and 10, Tables B and D).

Present Application Example 2		Bunger; Table B	Bunger; Table D
Mean particle size (Malvern Mastersizer)	1.93 microns	<1 μm	1.6 μm
Brightness (R457)	97.3	95.0 %	96.7 %
Tap density	0.97 g/cc	--	--
HCl insolubles	0.13 %	--	--
pH value	9.3	9.5	--
BET surface area	4 m ² /g	--	--
MgO	<0.05 %	(0.3% Mg)	0.3 %
Al ₂ O ₃	0.07 %	0.67 %	0.6 %
SiO ₂	0.16 %	0.92 %	0.7 %
Fe	1 ppm	<0.01 %	<0.01 % (Fe ₂ O ₃)
Mn	<1 ppm	--	--
SO ₃	0.03%	--	--

As can be observed in the above table, the claimed process provides a much purer product (at least six (6) times more pure than that of the Bunger process). This is despite using a highly impure starting carbide lime.

The So reference is silent as to the level of purity of the carbonate product produced according the process described therein.

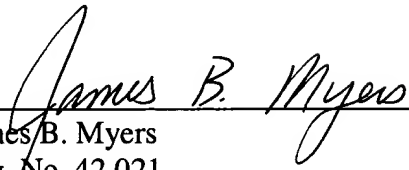
Therefore, in light of the above discussion it is believed that the claimed process provides unexpected results, i.e., an extremely pure calcium carbonate product from a particularly impure lime source. It is believed that the invention as claimed in claims 16, 20-27, and 31 is non obvious over the cited references. Therefore, withdrawal of the rejections of the claims is respectfully requested.

Conclusion

In light of the above discussion, the Applicants respectfully request reconsideration of this application leading to withdrawal of the rejections under 35 USC § 103(a) of claims 16, 20-27, and 31. The Examiner is invited to contact the undersigned attorney by telephone if there are

any questions about this Response or other issues that may be resolved in that fashion.

Respectfully submitted,

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